

CLAIMS

1. A aqueous polymer composition comprising a simple mixture of:

- 5 a) at least one aqueous asphalt dispersion; and  
b) at least one aqueous dispersion of at least one polyurethane, said polyurethane being obtained from a polyol component comprising at least one hydroxylated polydiene, said aqueous polyurethane dispersion having  
10 previously and separately been prepared according to the following steps:

- (a) formation of a prepolymer having NCO functional groups by reaction in a solvent of a polyisocyanate, of a polyol and of a diol  
15 containing at least one neutralized acid functional group, the NCO functional groups being in excess relative to the OH functional groups,  
(b) dispersion of the prepolymer in water,  
20 (c) addition of a diamine-type chain extender, and  
(d) evaporation of the solvent in order to obtain an aqueous polyurethane dispersion containing urea functional groups.

25 2. The composition as claimed in claim 1, characterized in that at least 50% and preferably at least 80% by weight of said polyol component consists of at least one hydroxytelechelic conjugated-diene  
30 oligomer.

3. The composition as claimed in claim 2, characterized in that said oligomer is selected from oligomers based on: butadiene, isoprene, chloroprene,  
35 1,3-pentadiene or cyclopentadiene, or on mixtures thereof.

4. The composition as claimed in either of claims 2

and 3, characterized in that said oligomer has a number-average molecular weight  $M_n$  of 500 to 15 000 and preferably 1000 to 3000.

5     5.    The composition as claimed in one of claims 2 to 4, characterized in that said oligomer has a hydroxyl number expressed in meq/g of 0.5 to 5 and preferably of 0.7 to 1.8.

10    6.    The composition as claimed in one of claims 1 to 5, characterized in that said polyol component also comprises a diol carrying at least one neutralized acid functional group.

15    7.    The composition as claimed in claim 6, characterized in that said diol is triethylamine-neutralized dimethylolpropionic acid.

20    8.    The composition as claimed in one of claims 1 to 7, characterized in that said polyurethane is obtained from a polyisocyanate component comprising at least one aliphatic, aromatic or cycloaliphatic polyisocyanate having a functionality of at least two.

25    9.    The composition as claimed in one of claims 1 to 8, characterized in that, to obtain said polyurethane, the proportions of the polyisocyanate component and of the polyol component are such that the overall NCO/OH ratio is between 1.5 and 2.5.

30    10.   The composition as claimed in one of claims 1 to 9, characterized in that said aqueous polyurethane dispersion is obtained with a chain extender chosen from diamines.

35    11.   The composition as claimed in one of claims 1 to 10, characterized in that said polyurethane represents from 2 to 50% and preferably from 5 to 25% by weight relative to the total asphalt + polyurethane weight,

the weight being expressed as dry matter.

12. The composition as claimed in one of claims 1 to 11, characterized in that said aqueous polyurethane dispersion is obtained using a process comprising the following steps;

(a) formation of a prepolymer having NCO functional groups by reaction in a solvent:

- of a polyisocyanate component, and
- of a polyol component comprising a diol, carrying at least one neutralized acid functional group, the NCO functional groups being in excess relative to the OH functional groups, and in a ratio of between 1.5 and 2.5,

(b) dispersion of the prepolymer in water,

(c) addition of a diamine-type chain extender, and

(d) evaporation of the solvent in order to obtain an aqueous polyurethane dispersion containing urea functional groups.

13. A method of preparation of a composition as defined in one of claims 1 to 12, characterized in that said composition is prepared by a simple blending of:

- i) at least one aqueous asphalt dispersion and
- ii) at least one aqueous dispersion of at least one polyurethane as defined in one of claims 1 to 12.

14. The method of preparation as claimed in claim 13, characterized in that the weight proportion of the polyurethane dispersion represents from 2 to 75% of the total of bitumen and polyurethane dispersions, in the case of bitumen and polyurethane dispersions having independent solids contents varying within a range from 20 to 60% and preferably from 30 to 50% by weight of each dispersion.

15. The method of preparation as claimed in either of

claims 13 and 14, characterized in that the aqueous polyurethane dispersion is prepared, beforehand and separately, according the following steps:

- 5 (a) formation of a prepolymer having NCO functional groups by reaction in a solvent of a polyisocyanate, of a polyol and of a diol containing at least one neutralized acid functional group, the NCO functional groups being in excess relative to the OH functional groups,
- 10 (b) dispersion of the prepolymer in water,
- (c) addition of a diamine-type chain extender, and
- (d) evaporation of the solvent in order to obtain
- 15 an aqueous polyurethane dispersion containing urea functional groups.

16. A coating composition comprising at least one composition as defined in one of claims 1 to 12 or  
20 obtained by the method defined in one of claims 13 to 15.

17. The composition as claimed in claim 16, characterized in that said coating is a protective,  
25 sealing or waterproof, soundproofing or damping coat or coating for application for roads, roofing, in buildings or in industry.

18. The use of a composition as defined in one of  
30 claims 1 to 12 or obtained by the method defined in one of claims 13 to 15 in the production of surface coats, waterproof courses under asphalt road mixes, roofing membranes, asphalt road mixes, slurry seals or cold cast mixes, agglomeration binders, protective coverings  
35 for pipes, carpet underlay impregnation and tie layers, soundproofing and damping or insulating coverings.

19. A method of use as claimed in claim 18, characterized in that it comprises the following steps:

- a) blending of at least one aqueous asphalt dispersion with at least one aqueous dispersion of at least one polyurethane as defined in one of claims 1 to 12;
  - 5 b) direct application of the blend obtained in step a) to the application object or substrate;
  - c) drying/film-forming by simple water evaporation;
- it being possible for steps a), b) and c) to be carried out on the actual site of the application and under the ambient conditions of the application site.
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20. Coatings, surface coats, waterproof courses under asphalt road mixes, roofing membranes, asphalt road mixes, slurry seals or cold cast mixes, agglomeration binders, protective coverings for pipes, carpet underlay impregnation and tie layers, soundproofing and damping or insulating coverings obtained by the method as defined in claim 19, or from a modified asphalt dispersion as defined in one of claims 1 to 12, or obtained by the method as defined in one of claims 13 to 15.

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